



US006813219B1

(12) **United States Patent**  
**Blackmon**

(10) **Patent No.:** **US 6,813,219 B1**  
(45) **Date of Patent:** **Nov. 2, 2004**

(54) **DECISION FEEDBACK EQUALIZATION  
PRE-PROCESSOR WITH TURBO  
EQUALIZER**

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(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/663,054**

(22) Filed: **Sep. 15, 2003**

(51) Int. Cl.<sup>7</sup> ..... **H04B 11/00**

(52) U.S. Cl. .... **367/134**

(58) Field of Search ..... 367/134; 375/233

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(57) **ABSTRACT**

The present invention provides a receiver for underwater acoustic telemetry which combines a decision feedback adaptive equalizer structure with a turbo-equalizer structure. The turbo-equalizer structure is of significantly reduced complexity because the decision feedback adaptive equalizer structure is operable to pre-process a plurality of data channels to provide a single symbol data output stream for application to the input of the turbo-equalizer. The turbo-equalizer structure is also of reduced complexity due to use of a correlator to provide channel response data to the turbo-equalizer. The channel response data is produced by comparing received data comprising a training sequence with a locally produced training sequence.

**14 Claims, 2 Drawing Sheets**

